

## Patent Claims

1. A method for adaptive predistortion of digital raw data values for a transmission output stage, which has a power amplifier (6), of a communication appliance, such as a mobile communication terminal or a base station in a mobile radio network having the following steps:
  - a) predistortion of the raw data values ( $V_m$ ) by multiplication of the raw data values by predistortion values from a reference table (2) in order to compensate for amplitude-dependent and phase-dependent distortion in the power amplifier (6), wherein the reference table (2) contains an association between amplitudes of the raw data values and predistortion values,
  - b) feeding back of output signal values ( $V_r$ ) from the power amplifier (6) to an adaptation unit (9),
  - c) passing the raw data values ( $V_m$ ) to the adaptation unit (9),
  - d) comparison in the adaptation unit of raw data values and output signal values which correspond to one another in time, in order to assess the distortion in the power amplifier (6),
  - e) adaptation of the reference table (2) on the basis of results from step d), characterized in that the adaptation unit (9) operates discontinuously and the predistortion values in the reference table (2) are interpolated/extrapolated at least for raw data values ( $V_m$ ) which do not occur.
2. The method as claimed in claim 1, characterized in that the adaptation is carried out within time windows on the basis of results from step d).

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3. The method as claimed in claim 2,  
characterized in that  
an interval between successive time windows is defined  
as a function of external parameters which influence  
5 the distortion in the power amplifier (6), and of any  
desired interference suppression.

4. The method as claimed in one of claims 1 to 3,  
characterized in that  
10 a polynomial is calculated for the amplitudes of the  
output signal values ( $V_r$ ) as a function of the  
amplitudes of the raw data values ( $V_m$ ) for each time  
window, and the predistortion values in the reference  
table are determined on the basis of the function  
15 values of the polynomial.

5. The method as claimed in claim 4,  
characterized in that  
the polynomial is calculated on the basis of a  
20 predetermined number of mutually adjacent amplitude  
intervals of the raw data values ( $V_m$ ), wherein each  
amplitude interval is associated with a mean value for  
the raw data values ( $V_m$ ) which occur in this interval,  
and a mean value of the associated output signal values  
25 ( $V_r$ ).

6. The method as claimed in one of claims 1 to 5,  
characterized in that  
real predistortion values are used for processing.  
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7. The method as claimed in one of claims 1 to 5,  
characterized in that  
complex predistortion values are used for processing.

8. An apparatus for linearization of a transmission amplifier in a communication appliance, such as a mobile communication terminal or a base station in a mobile radio network, having:

5 a multiplier (3) for multiplication of digital raw data values ( $V_m$ ) by predistortion values in order to compensate for amplitude-dependent distortion in the power amplifier (6), wherein the reference table (2) contains an association between amplitudes of the raw data values ( $V_m$ ) and predistortion values, and

10 an adaptation unit (9), to which output signal values from the power amplifier (6) and the raw data values ( $V_m$ ) are passed synchronized in time and which is designed for adaptation of the reference table (2), characterized in that

15 the adaptation unit (9) has a timer which defines a time window which is used for the adaptation of the reference table (2).